

**UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF OKLAHOMA**

OKLAHOMA FARM BUREAU MUTUAL	)	
INSURANCE COMPANY AS SUBROGEE,	)	Case No.CIV-22-18-D
OF MICHEL DIEL	)	
Plaintiffs,	)	Removed from the District Court
	)	Garfield County, Oklahoma
v.	)	Case No. CJ-2021-254-02
	)	
OMEGA FLEX, INC.,	)	ORAL ARGUMENT
Defendant.	)	REQUESTED

**DEFENDANT OMEGA FLEX, INC.’S MOTION AND OPENING  
MEMORANDUM OF LAW TO EXCLUDE CAUSATION OPINIONS AND  
TESTIMONY FROM ELIZABETH C. BUC PURSUANT TO FED. R. EVID. 702**

Omega Flex, Inc. (“Omega Flex”) respectfully seeks an Order to preclude causation testimony and opinions from Plaintiff Farm Bureau’s putative causation expert Elizabeth C. Buc pursuant to Federal Rule of Evidence 702. Buc is a metallurgist who submitted a conclusory 9-page report with no citations or discussion of sources that she claims to have reviewed for this case. As discussed herein, Buc’s opinions regarding the cause of the fire at issue do not meet the standard for admissibility of expert testimony under Rule 702 because (i) they are unsupported *ipse dixit* and (2) she is not qualified to offer opinions that are foundational to her ultimate conclusion. Omega Flex requests oral argument and/or a *Daubert* hearing to address these issues if the Court deems it helpful to decide this motion.

**FACTUAL BACKGROUND**

On July 11, 2020, lightning struck the north gable of the Diel’s home, causing an attic fire. A fulsome discussion of the causation issues in this case is contained in Omega Flex’s concurrent Motion and Opening Memorandum of Law To Exclude Causation

Opinions and Testimony from Charles Colwell, Mark Hergenrether, and Johnie Spruiell Pursuant to Fed. R. Evid. 702, which is incorporated herein to avoid a lengthy, duplicative filing here. In brief, the causation questions in this case involve three material undisputed facts relevant to this Motion: (1) the Diel's home was directly struck by a rare, positive-charged lightning strike with a peak current of 52.5 kA,<sup>1</sup> (2) the size of the hole found in the Diel's CSST line after the fire was just 0.38 mm<sup>2</sup>, and (3) the amount of electrical energy transfer or "arc" required to produce a hole that size is 0.12 coulombs (or "C"). Thus, the two specific causation questions in this case are:

- (1) Can a positive-charged lightning strike with a peak current of 52.5 kA cause a 0.12 coulomb arc; and
- (2) Can a 0.12 coulomb arc cause sustained ignition of propane escaping (if any) from a 0.38 mm<sup>2</sup> hole, such that the gas-fed flame could have ignited combustible material in the Diel's attic?

Farm Bureau retained Elizabeth Buc, Ph.D., PE, IAAI-CFI, "to examine and determine the cause of damage to TracPipe corrugated stainless steel tubing (CSST), manufactured by Omega Flex, from the Diel home...and its involvement in a fire..." See **Exhibit 2**, Report of Elizabeth C. Buc, dated March 3, 2023, p. 2. More specifically, Farm Bureau retained Buc to provide opinions "with respect to the metallurgy and the root cause of the opening of the [CSST] in the defined area of origin that has been identified by others." See **Exhibit 3**, Deposition of Elizabeth C. Buc, dated May 11, 2023, at 18:14-19:2.

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<sup>1</sup> See **Exhibit 1**, Expert Report of Timothy L. Morse, Ph.D., CFEI ("Morse Report"), dated April 3, 2023, at p. 42.

As Farm Bureau did not retain Buc as a fire investigator, Buc never inspected the home herself. Buc testified that her role in this case is not “trying to take over the position of Fire Investigator Ozment.” *Id.* at 58:2-5.<sup>2</sup> Her opinions regarding the scene of the fire are based only on photographs and testing done by others at the scene, or testing of artifacts taken from the scene after the fire. She did not attempt to rule out all potential ignition sources other than a gas-fed fire from the CSST. *Id.* at, 17:5-14 (“But with respect to other potential ignition scenarios, I leave that to the fire investigator and/or Integrity.”).

The body of Buc’s 9-page report contains no citations, discussion, or analysis of peer-reviewed testing or literature. Buc does include a “Documents Reviewed” section on page 2-3 that includes articles, but she does not cite to, discuss, or analyze the content of any of the listed articles anywhere in the body of her Report, and she does not indicate if or how her relied on the articles she “reviewed.” The lone citation in the body of her Report is to a weather report. Buc’s Report does not provide cites to any specific deposition testimony or documents produced in the case either.

Buc opines that the melt opening of the CSST hole is “consistent with a higher temperature arc event.” Buc Report, at p. 8. Buc’s metallurgy opinions are based on testing of the Diel’s CSST performed by RTI Laboratories on February 6, 2023. *See* Buc Rep., at BUC\_000041. In a footnote, Buc states without citation that “[p]revious laboratory studies have shown the metals from the arc event with corresponding electrodes can deposit on the jacket which is then consumed.” Buc Rep., at p. 5, n.1. Based on that footnote, she

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<sup>2</sup> Omega Flex has separately moved to exclude Curtis Ozment’s opinion in this case.

concludes:

- (1) The “minor amount of aluminum” detected at the melt opening of the CSST hole was consistent with an electrical arc coming from the aluminum coaxial cable jacket near the CSST.
- (2) “Copper was not found in the chemistry of melt eliminating contact by energized household electrical conductors.” Buc Rep., at 5.

Buc’s opinions go far beyond metallurgy to the ultimate cause of the fire. She broadly opines: “the cause of the fire was a lightning strike induced failure of the TracPipe CSST that resulted in the release and ignition of the escaping fuel resulting in a fuel fed fire.” Buc Report, at p.8. As noted, a full discussion of the causation issues that this opinion raises is found in Omega Flex’s Colwell, *et al.* Rule 702 motion. For purposes of this motion, the fact is that Buc, like Farm Bureau’s other putative experts, *also* did not cite to or conduct any test demonstrating that a positive lightning strike can cause a 0.12 C arc, or that a .12 C arc can cause sustained ignition of propane from a CSST hole.

Buc’s opinion on ignition is limited to an opinion that it is generally possible for an electrical arc to ignite propane because the temperature of the arc “creates conditions that contribute to the ignition of the escaping gas.” Buc Report, at 8. But Buc’s Report contains no mention of the issue of gas velocity either preventing flame propagation or blowing out a flame before it can achieve sustained ignition. And because she did not rule out a pre-existing fire, her Report does not discuss the ability of an existing fire to ignite the propane. See Morse Rep. at 42.

Buc also opines that the “short timeline from the lightning event to the Diels smelling and seeing smoke further” somehow supports her theory that the fire was

originally located at the CSST rather than a few feet below it in the same attic space. Buc provides no citations, analysis, or test supporting this opinion.

### **ARGUMENT**

Federal Rule of Evidence 702 provides

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

The Supreme Court has interpreted Rule 702 to require that an expert's testimony be both reliable, in that the witness is qualified to testify regarding the subject, and that his or her testimony must be relevant—that it will assist the trier in determining a fact in issue. *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 589- 592 (1993); *Truck Ins. Exchange v. MagneTek, Inc.*, 360 F.3d 1206, 1210 (10th Cir. 2004). The Court's role in weighing expert opinions against these standards is that of a “gatekeeper” to “ensure that any and all scientific testimony...is not only relevant, but reliable.” *See Kumho Tire Company, Ltd. v. Carmichael*, 526 U.S. 137, 147 (1999).

A proper *Daubert* analysis requires examining (1) whether the expert's technique or theory can be or has been tested; (2) whether the technique or theory has been subject to peer review and publication; (3) the known or potential rate of error of the technique or theory when applied; (4) the existence and maintenance of standards and controls; and (5) whether the technique or theory has been generally accepted in the scientific

community.” *Daubert*, 509 U.S. at 593-94. The proponent of expert testimony has the “burden of establishing the admissibility of the testimony by a preponderance of the evidence.” Fed. R. Evid. 402, *Daubert*, at 592, n. 10; *Ralston v. Smith & Nephew Richards, Inc.*, 275 F.3d 965, 970, n. 4 (10th Cir. 2001). “The plaintiff must show that the method employed by the expert in reaching the conclusion is scientifically sound and that the opinion is based on facts which sufficiently satisfy Rule 702's reliability requirements.” *Mitchell v. Gencorp Inc.*, 165 F.3d 778, 781 (10th Cir. 1999) (citations omitted).

“An inference to the best explanation for the cause of an accident must eliminate other possible sources as highly improbable, and must demonstrate that the cause identified is highly probable.” *Bitler v. A.O. Smith Corp.*, 400 F.3d 1227, 1238 (10th Cir. 2005); *Roe v. FCA US LLC*, 42 F.4th 1175, 1182 (10th Cir. 2022) (affirming exclusion of experts who failed to conduct or rely on tests demonstrating that the alleged accident occurred under the circumstances alleged). Although experts may extrapolate from existing data, “nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997). As the 10th Circuit has recognized, the “precedent is clear and unequivocal that the *ipse dixit* of an expert, no matter how qualified he may be, is never enough to guarantee him a ticket to admissibility.” *Graves v. Mazda Motor Corp.*, 405 F. App'x 296, 300 (10th Cir. 2010).

As a result, “[t]he trial court's gatekeeping function requires more than simply ‘taking the expert's word for it.’” Fed. R. Evid. 702, Ad. Cmtee. Notes. “There must be a

reliable and identifiable basis for the expert's opinions, grounded in the evidence and in the practices and standards of the particular discipline involved.” *Schulenberg v. BNSF Ry. Co.*, No. CIV-16-623-HE, 2017 WL 6419301, at \*3 (W.D. Okla. Dec. 15, 2017), *aff’d*, 911 F.3d 1276 (10th Cir. 2018). Consistent with its burden, the party presenting the expert “must *show* that the expert's findings are based on sound science, and this will require some objective, independent validation of the expert's methodology.” *Pearson v. Young*, 2002 WL 32026157, \*3 (W.D. Okla., 2002) (emphasis added).

As discussed below, Buc’s opinions are all inadmissible *ipse dixit*. Buc does not cite, discuss, or analyze any identifiable source for any of the opinions that she offers in the body of her Report. Her Report fails to explain if, or how, any of the “documents” that she “reviewed” influenced her methodology or opinions. There is no “objective, independent” validation of her opinions presented. Farm Bureau cannot point to anything in her Report that *shows* her opinions to be reliable. *See United States v. Rodriguez-Felix*, 450 F.3d 1117, 1125 (10th Cir. 2006) (expert properly excluded when his report’s discussion of even his own research “fails to indicate whether it has been subjected to peer review, whether it has been published, and whether it has been accepted by other [experts] in the field.”).

# **I. BUC’S *IPSE DIXIT* OPINION REGARDING THE CAUSE OF THE HOLE SHOULD BE EXCLUDED**

Buc’s ultimate conclusion that the fire originated at the CSST is based on her opinion that an aluminum coaxial cable jacket near the CSST was the opposing electrode on the electrical arc to the CSST. Buc based that opinion on a laboratory test of the CSST

showing “minor amounts of aluminum,” which she claims was transferred from the coaxial cable jacket during the arc. Buc Rep. at 5. The only identifiable basis for that opinion is a footnote stating: “[p]revious laboratory studies have shown the metals from the arc event with corresponding electrodes can deposit on the jacket which is then consumed.” The footnote contains no citation or other way to identify the “previous laboratory studies,” which Buc does not analyze or discuss in the context of the evidence in this case. This missing analysis is important because Buc fails to provide any support for the proposition that, in her words, the “minor amounts” of aluminum found (.08% according to the RTI report at BUC\_000041) in the lab test are adequate to reach a conclusion about the origin of that aluminum based on those uncited studies. Accordingly, Farm Bureau cannot meet its burden to show that her opinions are reliable.

Buc also purports to “eliminate” arc transfer from household electrical conductors because “[c]opper was not identified in any of the areas [of the CSST sample] analyzed.” Buc Report at 5. ***But copper was identified.*** The RTI Laboratories report showed .241% copper, which on its face does not appear to be much less than the “minor amount” of .8% of aluminum found, especially in a sample that is almost entirely Iron, Chromium, and Nickel. BUC\_000041. Buc fails to address these facts. Even if .2421% copper somehow means “no copper” in her mind, Buc cites nothing for the general proposition that the absence of a metal at the melt location is adequate to rule out an arc transfer from a source containing that metal. Buc cannot rule out a corresponding electrode without reliable support for that proposition.



Omega Flex's experts demonstrated through their own testing, discussed in detail in its Report, that electrical arcing from a copper wire to CSST will not result in copper found around the surface of the hole after the arc. *See* Morse Rep. Appendix C.9. This testing undermines Buc's entire metallurgical analysis. Buc cites no contrary testing or literature, and she did not issue a rebuttal report disputing Exponent's testing.

Moreover, as discussed in the Colwell *et al.* Rule 702 Motion, Buc also fails to even address the question of whether a positive charged lightning strike can produce an arc as small as .12 C. If Buc cannot reliably identify the coaxial cable as the opposing electrode for a lightning-induced .12 C arc, she cannot reliably opine that gas escaping from the CSST was the first fuel ignited. Her opinions should be excluded under Rule 702.

## **II. BUC'S *IPSE DIXIT* OPINIONS REGARDING IGNITION SHOULD BE EXCLUDED**

### **A. Buc Is Not Qualified To Opine On The Propensity For Electrical Arcs To Cause Sustained Propane Ignition From A Breach In CSST**

Buc opines that "ignition of the escaping fuel result[ed] in a fuel fed fire." Buc Report, at 8. As a threshold matter, Buc is not qualified to opine on the issue of electrical arc ignition of propane. An expert may be qualified by "knowledge, skill, experience, training, or education" to offer an opinion on an issue relevant to the case. Fed. R. Evid. 702(a). The Court must "make certain that the expert ... employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Goebel v. Denver and Rio Grande Western Railroad Co.*, 346 F.3d 987, 992 (10th Cir. 2003) (quoting *Kumho Tire*, 526 U.S. at 152). In that regard, it does not matter if Buc may be qualified to testify about other subjects or other aspects of fire investigation. Expertise

must be “specific to the matter [s]he proposes to address as an expert.” *Graves v. Mazda Motor Corp.*, 675 F. Supp. 2d 1082, 1092–93 (W.D. Okla. 2009), *aff’d*, 405 F. App’x 296 (10th Cir. 2010).

Here, Buc’s general experience, or her experience as a metallurgist, is not relevant to providing opinions on the probability of electrical arcs to ignite or sustain ignition of propane escaping from CSST. Nothing in her CV indicates that she has researched or published specifically on the propensity for electrical arcs to cause propane ignition or a sustained flame. Further, as with the rest of her conclusory Report, nothing in her Report explains how whatever credentials or experience she possess is relevant to reaching reliable expert opinions about these specific issues. “Experience is not a methodology.” *Dean v. Thermwood Corp.*, No. 10-CV-433-CVE-PJC, 2012 WL 90442, at \*7 (N.D. Okla. Jan. 11, 2012) (excluding expert who “failed to explain how his experience informed his analysis and produced the conclusions he seeks to sponsor.”). “Where an expert bases his opinions on his experience rather than scientific testing, he still must explain how the experience informs his opinions.” *Id.* at \*5. Buc’s Report nowhere explains if, how, her experience entitles her to offer expert opinions about the probability of achieving sustained propane ignition from an electrical arc to CSST.

Accordingly, Buc’s opinion on ignition, and her ultimate opinion on the cause of the fire, are not admissible under Rule 702.

**B. Buc's Opinion That An Electrical Arcs Caused Sustained Propane Ignition From A Breach In The Diel's CSST Is Inadmissible *Ipse Dixit***

Buc opines that “ignition of the escaping fuel result[ed] in a fuel fed fire” in the Diel’s attic. Buc Report, at 8. Buc did not even begin to address the ignition question of whether using a reliable methodology. Buc conducted no ignition testing for this case, she cited none, and as discussed in the Colwell et al. Rule 702 Motion, there was no ignition testing for her to have relied on that involved electrical charge transfer at issue in this case.

Buc’s only underlying opinion regarding ignition of the propane is that the temperature of an electrical arc is adequate to ignite propane. Buc Report, p. 7 (mentioning the ignition temperate of propane gas as 940<sup>0</sup>F). Buc cites nothing for this proposition, but even if she is right, that says nothing about the ***probability*** of achieving sustained ignition from a hole formed with .12 C of charge in the Diel’s attic. As with Farm Bureau’s other putative experts, Buc admits that she is not aware of any ignition testing with CSST using less than 1 C of charge. Buc Dep., at 75:4-14, 76:20-25. *See Black v. M & W Gear Co.*, 269 F.3d 1220, 1237–38 (10th Cir.2001) (district court properly “excluded the evidence because [the expert] had not based his conclusion on the results of tests or calculations specific to [the plaintiff’s] accident”). She “did not even attempt to set up a simulation or to replicate any conditions in the [Diel’s] home...” *Shanley, et al. v. Omega Flex, Inc.*, No. 19-CV-664-SLC, 2021 WL 778921, at \*4 (W.D. Wis. Mar. 1, 2021) (granting summary judgment to Omega Flex).

Buc did not address anything relating to the ignition question other than temperature. That Buc completely fails to address the separate issue of gas jet velocity also

demonstrates why her entire report fails the *ipse dixit* test. A reliable ignition opinion must address this issue because, as Farm Bureau's own experts have written, an electrical arc is not likely to result in a sustained flame because the velocity of the escaping gas exceeds the flame propagation rate. **Exhibit 4**, Deposition of Johnie Spruiell, dated May 12, 2023 at 82:3-84:1 9. That means that gas escaping from a CSST hole, in the absence of other factors, is likely travelling too fast to ignite at the location of the hole, or that a momentary flame will immediately blow itself out before ever achieving the sustained ignition necessary to light nearby combustibles on fire. Morse Rep. at 48; Spruiell Dep., 81:18-10.

Buc is surely aware of the gas velocity issue because her "Documents Reviewed" section includes the very Spruiell-authored paper in which this discussion appears. Buc Report, p. 3. But as with the rest of her "Documents Reviewed," Buc completely fails to discuss or analyze Spruiell's article. She therefore fails to address how the content of Spruiell's article relates to or supports her opinions in this case, including how the gas velocity issue discussed in that article may or may not have impacted her conclusions. Farm Bureau cannot "*show* that [Buc's] findings are based on sound science" or demonstrate that they are supported by "some objective, independent validation of the [Buc's] methodology" when she fails to specifically cite anything specific or discuss the content of any test or article in the context of her analysis and opinions. *Pearson*, 2002 WL 32026157, \*3.

Accordingly, Plaintiff cannot meet its burden to show that Buc's opinions relating to ignition were grounded in a reliable methodology. Without that, she cannot testify as to the ultimate cause of the fire under Rule 702.

### **CONCLUSION**

Buc's opinions regarding the cause of the CSST hole and whether propane escaping from the hole achieved sustained ignition should be excluded. If either of those opinions are excluded—and both of them should be—Buc cannot testify as to the ultimate cause of the fire. For the reasons stated herein, Omega Flex respectfully seeks an Order precluding testimony and opinions from Elizabeth C. Buc under Fed. R. Evid. 702.

Dated: July 17, 2023

Respectfully submitted by,

/s/ Adam M. Masin

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**CERTIFICATE OF SERVICE**

I hereby certify that on this 17th day of July, 2022, a copy of the foregoing Motion and Opening Memorandum of Law in Support of Its Motion to Exclude Opinions and Testimony from Elizabeth C. Buc Pursuant to Fed. R. Evid. 702 was filed electronically and served by mail on anyone unable to accept electronic filing. Notice of this filing will be sent by e-mail to all parties by operation of the Court's electronic filing system or by mail to anyone unable to accept electronic filing as indicated on the Notice of Electronic Filing. Parties may access this filing through the Court's CM/ECF System.

By: /s/ Adam M. Masin  
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